

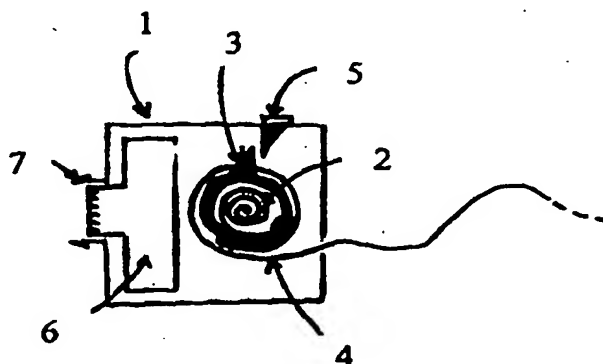


## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> <b>H04M 1/00, H04Q 7/32</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 99/60764</b> <b>(43) International Publication Date:</b> 25 November 1999 (25.11.99)
<b>(21) International Application Number:</b> PCT/AU99/00374 <b>(22) International Filing Date:</b> 18 May 1999 (18.05.99) <b>(30) Priority Data:</b> PP 3576                      18 May 1998 (18.05.98)                      AU <b>(71)(72) Applicant and Inventor:</b> WHITE, Simon, John [AU/AU]; 1B Mermaid Avenue, Maroubra, NSW 2035 (AU). <b>(74) Agent:</b> SMEETON, Anthony, Richard; Davies Collison Cave, Level 10, 10 Barrack Street, Sydney, NSW 2000 (AU).		<b>(81) Designated States:</b> AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i> <i>With amended claims and statement.</i>

BEST AVAILABLE COPY

(54) Title: HANDS-FREE DEVICE FOR MOBILE TELEPHONES



## (57) Abstract

A telephone accessory device (1) including a cord (4) having a microphone (9) and earpiece (10). The cord (4) is adapted to retract into a housing and onto a retraction means (2). The housing may be embodied as a separate casing, or may be contained within the casing of the telephone. The device may be connected via a wire or wireless connection to the telephone. The retraction means (2) may be a mechanical retraction device, such as a spring tension mechanism (2) with associated locking means (5), or, may include an electric motor to wind the cord (4) in a spool-like manner. The microphone (9) and earpiece (10) may be housed in or on the casing or the telephone (8).

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece			TR	Turkey
BG	Bulgaria	HU	Hungary	ML	Mali	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MN	Mongolia	UA	Ukraine
BR	Brazil	IL	Israel	MR	Mauritania	UG	Uganda
BY	Belarus	IS	Iceland	MW	Malawi	US	United States of America
CA	Canada	IT	Italy	MX	Mexico	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NE	Niger	VN	Viet Nam
CG	Congo	KE	Kenya	NL	Netherlands	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NO	Norway	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	NZ	New Zealand		
CM	Cameroon			PL	Poland		
CN	China	KR	Republic of Korea	PT	Portugal		
CU	Cuba	KZ	Kazakstan	RO	Romania		
CZ	Czech Republic	LC	Saint Lucia	RU	Russian Federation		
DE	Germany	LI	Liechtenstein	SD	Sudan		
DK	Denmark	LK	Sri Lanka	SE	Sweden		
EE	Estonia	LR	Liberia	SG	Singapore		

## Hands-Free Device for Mobile Telephones

### Background Of The Invention

The present invention relates to an accessory to enable 'hands-free' use of a mobile telephone.

- 5 In particular, the present invention relates to a personal portable hands-free device for mobile phones utilising a retractable cord, and, to a wireless personal portable hands-free device for mobile telephones.

### Description Of The Prior Art

- 10 Present day hands-free devices for mobile phones have a length of cord connecting the phone to a mouthpiece and earpiece allowing the user to converse on the mobile phone without using their hands. This is especially useful when driving a motor vehicle.

- However, the cord can often prove an obstruction to many tasks when the mobile phone is  
15 not in use. To overcome this obstruction many users wind the cord around the mobile phone to prevent the cord from snagging on various objects. The next time the hands-free device is required the coil of cord must be unwound prior to use of the mouth and ear speakers.

- Use of 'hands-free' mobile telephones outside vehicles is also becoming increasingly popular.  
20 This is due to the convenience of having one's hands available for alternative uses other than holding the telephone, and also, due to fears of radiation from the transceivers of such telephones causing cancerous tumours or the like, particularly when the transceiver of the telephone is held proximal to a persons brain for extended periods of time.

- 25 This problem identifies a need for a device that provides the benefits of the current hands-free devices for mobile phones whilst removing the obstructing cord when the phone is not in use.

### Summary Of The Invention

- The present invention seeks to provide a hands-free device for mobile phones that has mouth  
30 and ear pieces separate from the mouth and ear pieces of the mobile phone.

In one broad form, the present invention provides a telephone accessory device including a cord having a microphone and earpiece at a free end thereof, and which is adapted to retract into a housing and onto a retraction means. Preferably, said housing is embodied in a separate casing adapted to plug into a socket provided in a telephone casing. Alternatively, 5 but also preferably, said housing is formed integrally within a casing of a telephone. Alternatively still, but also preferably, said housing is embodied in a separate casing adapted to be connected by a wireless communications channel to said telephone. In a preferred embodiment, said telephone is a mobile telephone. Preferably, said retraction means is a spring tension mechanism, or other mechanically biased mechanism. In this preferred form, 10 said retraction means retracts said cord in a spool-like manner. Also, in this preferred form, said retraction mechanism includes a locking means to prevent automatic retraction of said cord. In an alternatively preferred form, said retraction means is driven by an electric motor or the like. Preferably, said microphone and earpiece are adapted to be housed within said device or telephone, or be hooked or otherwise retained on said device or said telephone.

15

### **Brief Description Of The Drawings**

The present invention will become more fully understood from the following detailed description of a preferred but non-limiting embodiment thereof, described in connection with the accompanying drawings, wherein:

- 20        Figure 1 illustrates a preferred embodiment of the present invention; and,  
          Figure 2 illustrates a further preferred embodiment of the invention; and,  
          Figure 3 illustrates a further preferred embodiment of the invention.

### **Detailed Description Of A Preferred Embodiment**

- 25 Throughout the drawings, like numerals will be used to identify similar features, except where expressly otherwise indicated.

As shown in figure 1 the retractable hands-free device for mobile phones 1 embodied as a mobile phone attachment comprises a spring tension mechanism 2 which retracts the cord 30 when a locking mechanism 5 is released. The cord and spring mechanism are both attached to a fixing 3 which provides neat storage of the cord and allows the cord to be locked when the desired length of cord protrudes from the device 1. The casing for the accessory form

of the retractable hands-free device for mobile phones 1 also comprises the electronic circuitry 6 necessary for use with an existing mobile phone. The hands-free device 1 is fixed to the mobile phone by a mechanical means such as the locking pins 7 suitable for certain types of mobile phone accessory ports.

5

Another preferred embodiment of the present invention is shown in figure 2. In this embodiment the retraction mechanism is integrally formed within the casing of a mobile phone 8. The cord may be pulled out and set at the desired length using the locking button 5. The mouth piece 9, earpiece 10, and cord fixing clip 11, then act in the usual manner of  
10 a hands-free device for mobile phones. When the user wishes to retract the cord the stored potential energy in the spring mechanism 2 is utilised to pull the cord inside the phone. The phone may be provided with a clipping mechanism recess, or a housing to receive the ear and mouth pieces in a manner such that it is not loosely attached to the phone.

15 Yet another preferred embodiment of the present invention is shown in figure 3. In this embodiment the mouth and ear pieces have no electrical connection to the mobile phone. By means of a transmitting device 12 integrally formed within, or attached to, a mobile phone, an electromagnetic signal 13 is received by an antenna wire 14. A low power transceiver 15, shown in figure 3 to be integrally formed within the mouthpiece, allows wireless  
20 communication with the mobile phone within several metres distance. An alternatively preferred embodiment is to incorporate the mouth and ear pieces into a headset embodiment which may be more comfortable to wear for extended periods and/or which may be easier to take on and off.

25 Numerous other variations and modifications of the invention will become apparent to persons skilled in the art. All such variations and modifications should be considered to fall within the scope of the invention as broadly hereinbefore described and hereinafter claimed.

## THE CLAIMS

1. A telephone accessory device including a cord having a microphone and earpiece at a free end thereof, and which is adapted to retract into housing and onto a retraction means.
- 5 2. A telephone accessory device as claimed in claim 1, wherein said housing is embodied in a separate casing adapted to plug into a socket provided in a telephone casing.
3. A telephone accessory device as claimed in claim 1, wherein said housing is formed integrally within a casing of a telephone.
- 10 4. A telephone accessory device as claimed in claim 1, wherein said housing is embodied in a separate casing adapted to be connected by a wireless communications channel to said telephone.
- 15 5. A telephone accessory device as claimed in any one of claims 1 to 4, wherein said telephone is a mobile telephone.
6. A telephone accessory device as claimed in any one of claims 1 to 5, wherein said retraction means is a spring tension mechanism, or other mechanically biased mechanism.
- 20 7. A telephone accessory device as claimed in claim 6, wherein said retraction means retracts said cord in a spool-like manner.
8. A telephone accessory device as claimed in claim 6 or 7, wherein said retraction  
25 mechanism includes a locking means to prevent automatic retraction of said cord.
9. A telephone accessory device as claimed in any one of claims 1 to 5, wherein said retraction means is driven by an electric motor or the like.

10. A telephone accessory device as claimed in any one of claims 1 to 9, wherein said microphone and earpiece are adapted to be housed within said device or telephone, or be hooked or otherwise retained on said device or said telephone.

5

11. A telephone accessory device, substantially as herein described with reference to the accompanying drawings.

**AMENDED CLAIMS**

[received by the International Bureau on 30 September 1999 (30.09.99);  
original claims 1-11 replaced by new claims 1-8; (2 pages)]

1. A portable telephone having a main body including a transceiver for wireless communication with a communications network, characterised in that said telephone includes a microphone and earpiece which is attached to said main body by a cord which is retractably housed within said main body when said telephone is not in use, and such that, when in use, said cord is withdrawn from said main body whereby said transceiver is displaced from a user's head such that any harmful effects caused by transmission of electromagnetic radiation from said transceiver is minimised.
- 10 2. A portable telephone having a main body including a transceiver for wireless communication with a communications network, characterised in that said telephone includes a microphone and earpiece which is attached to a casing, by a cord which is retractably housed within said casing when said telephone is not in use, such that, said cord is withdrawn from said casing, and wherein said casing is adapted to be connected to said main body, whereby, said transceiver is displayed from a user's head such that any harmful effects caused by transmission of electromagnetic radiation from said transceiver is minimised.
- 15 3. A telephone accessory device as claimed claims 1 or 2, wherein said cord is retracted by a retraction means including a spring tension mechanism, or other mechanically biased mechanism.
- 20 4. A telephone accessory device as claimed in claim 3, wherein said retraction means retracts said cord in a spool-like manner.
- 25 5. A telephone accessory device as claimed in claim 3 or 4, wherein said retraction mechanism includes a locking means to prevent automatic retraction of said cord.
6. A telephone accessory device as claimed in any one of claims 3 to 5, wherein said retraction means is driven by an electric motor or the like.



7. A portable telephone having a main body including a transceiver for wireless communication with a communications network, characterised in that said telephone includes a microphone and earpiece which is connected to said telephone by a wireless communications channel whereby said transceiver is displaced from a user's head such that any harmful effects caused by transmission of electromagnetic radiation from said transceiver is minimised.

8. A telephone accessory device, substantially as herein described with reference to the accompanying drawings.

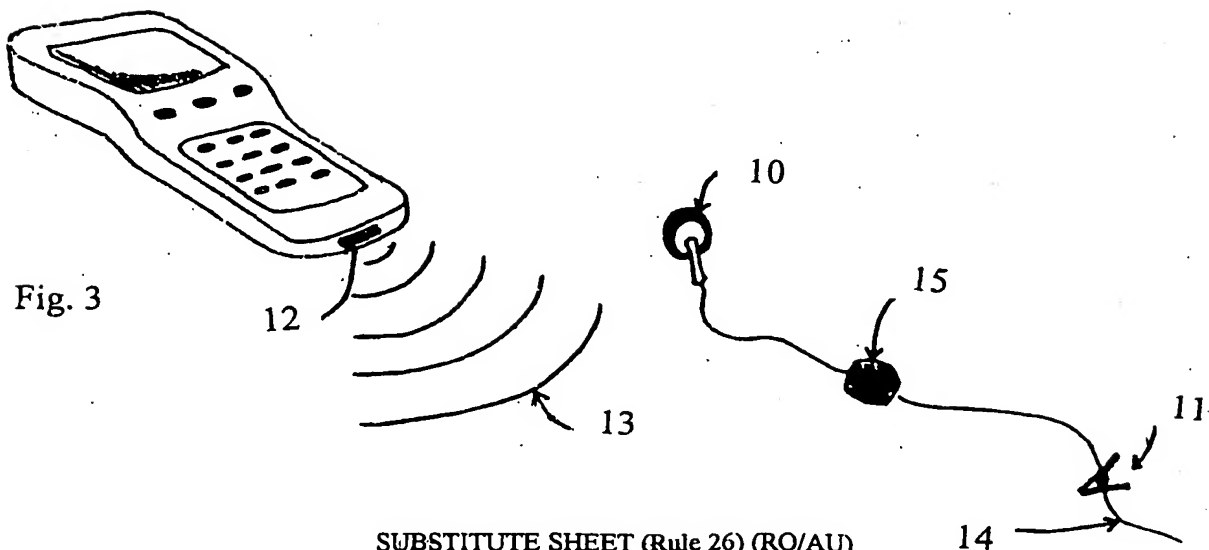
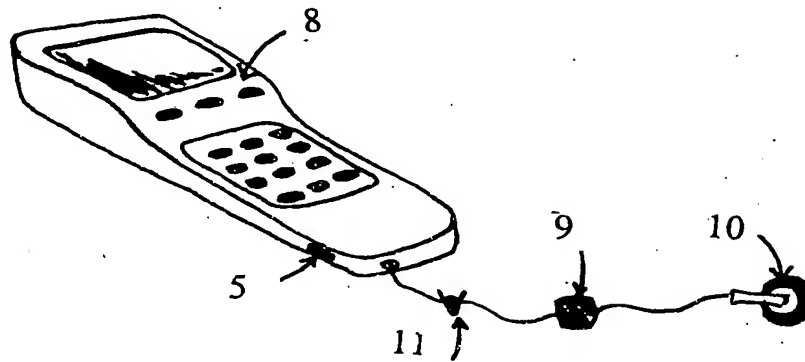
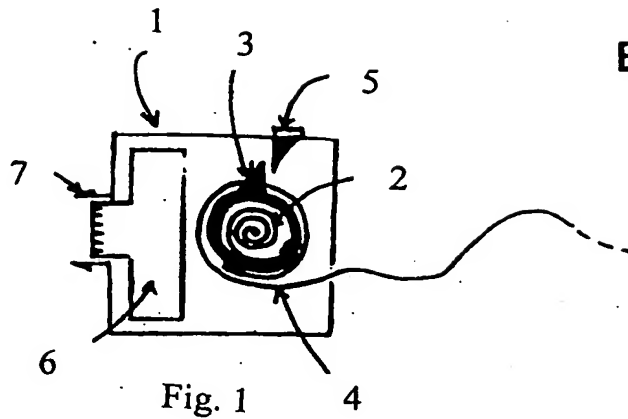
**AMENDED SHEET (ARTICLE 19)**

**STATEMENT UNDER ARTICLE 19**

1. Delete the set of claims presently on file and insert the new set of claims attached hereto. The new claims distinguish the invention from the citations.

None of the citations identified in the International Search Report disclose the 'inventive step' of separating the transmitter from the head, and particularly the brain, of the user, such that harmful effects of radiation, which may cause cancerous tumours or the like, is minimised. This is achieved, in the present invention, by separating the main body from the earpiece and microphone. Consequently, the present invention should be considered both novel and inventive.

BEST AVAILABLE COPY



# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU 99/00374

## A. CLASSIFICATION OF SUBJECT MATTER

Int Cl<sup>6</sup>: H04M 1/00; H04Q 7/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
IPC: H04B, H04M, H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
AU: IPC as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
DERWENT: mobile, portable, comm., device, hands - free, cord, cable, retract, stow, reel, wind:

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5511120 A (HIRATA et al), 23 April 1996 Whole document	1 - 11
Y	Patent Abstracts of Japan, E - 1193, page 89, JP 4 - 14323 A (MATSUSHITA ELECTRIC IND CO LTD), 20 January 1992 Abstract	1 - 11
Y	Patent Abstract of Japan, E - 1167, page 30, JP 3 - 258061 A (FUJITSU LTD), 18 November 1991 Abstract	1 - 11

☒ Further documents are listed in the  
continuation of Box C

☒ See patent family annex

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search  
28 July 1999

Date of mailing of the international search report  
10 AUG 1999

Name and mailing address of the ISA/AU  
AUSTRALIAN PATENT OFFICE  
PO BOX 200  
WODEN ACT 2606  
AUSTRALIA  
Facsimile No.: (02) 6285 3929

Authorized officer

MANISH RAJ

Telephone No.: (02) 6283 2175

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 99/00374

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4646987 A (PETERSON) 3 March 1987 Whole document	1 - 11
A	Patent Abstracts of Japan, E - 1280, page 79 JP 4 - 185038 A (HITACHI COMMON SYST INC), 1 July 1992 Abstract	1 - 11
A	Patent Abstracts of Japan, E - 1214, page 152 JP 4 - 56530 A (SANYO ELECTRIC CO LTD), 24 February 1992 Abstract	1 - 11

# INTERNATIONAL SEARCH REPORT

## Information on patent family members

International application No.  
PCT/AU 99/00374

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report				Patent Family Member			
US	511120	EP	624021	JP	6303295	JP	6334584
US	4646987	NO FAMILY MEMBER					
							END OF ANNEX